

A NEW SPECIES OF *PACHYOTOMA* BAGNALL, 1949 (COLLEMBOLA: ISOTOMIDAE) FROM CHINA¹

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ABSTRACT: *Pachyotoma emeiensis* sp. nov. characters is described from Sichuan Province, P. R. China. It differs from the 15 known species of the genus *Pachyotoma* in presence of both secondary granulation and endoskeletal reticulation on the body and 3 distinct teeth on mucro. Remarks on the taxonomical status of genera *Pachyotoma* and *Bonetrura* are provided.

KEY WORDS: Collembola, Isotomidae, *Pachyotoma*, endoskeletal reticulation, new species

The genus *Pachyotoma* consists of isotomids with secondary granulations on the integument, a well-developed furcula and a mucro separated from the dens. Dens is straight, cylindrical or gradually narrowed, not crenulated, with granulated surface on the posterior side. Macrochaetae are not differentiated and all species have numerous sensilla on the body tergites except for *Pachyotoma thermaquatica* Potapov, 2005.

In the course of a study of collembolan communities made in Guangxi Province, one isotomid that falls in the genus *Pachyotoma* Bagnall, 1949 was discovered and it is new to science. Species of the genus had never been reported from China until Potapov (2005) moved *P. dabeiensis* Tamura and Zhao 2000 from the genus *Bonetrura* Christiansen and Bellinger, 1980 into *Pachyotoma* Bagnall, 1949.

METHODS

The specimens were cleared in Nesbitt's fluid and mounted in Hoyer's solution. Fixed slides were heat dried under lamp lights for 5–6 days.

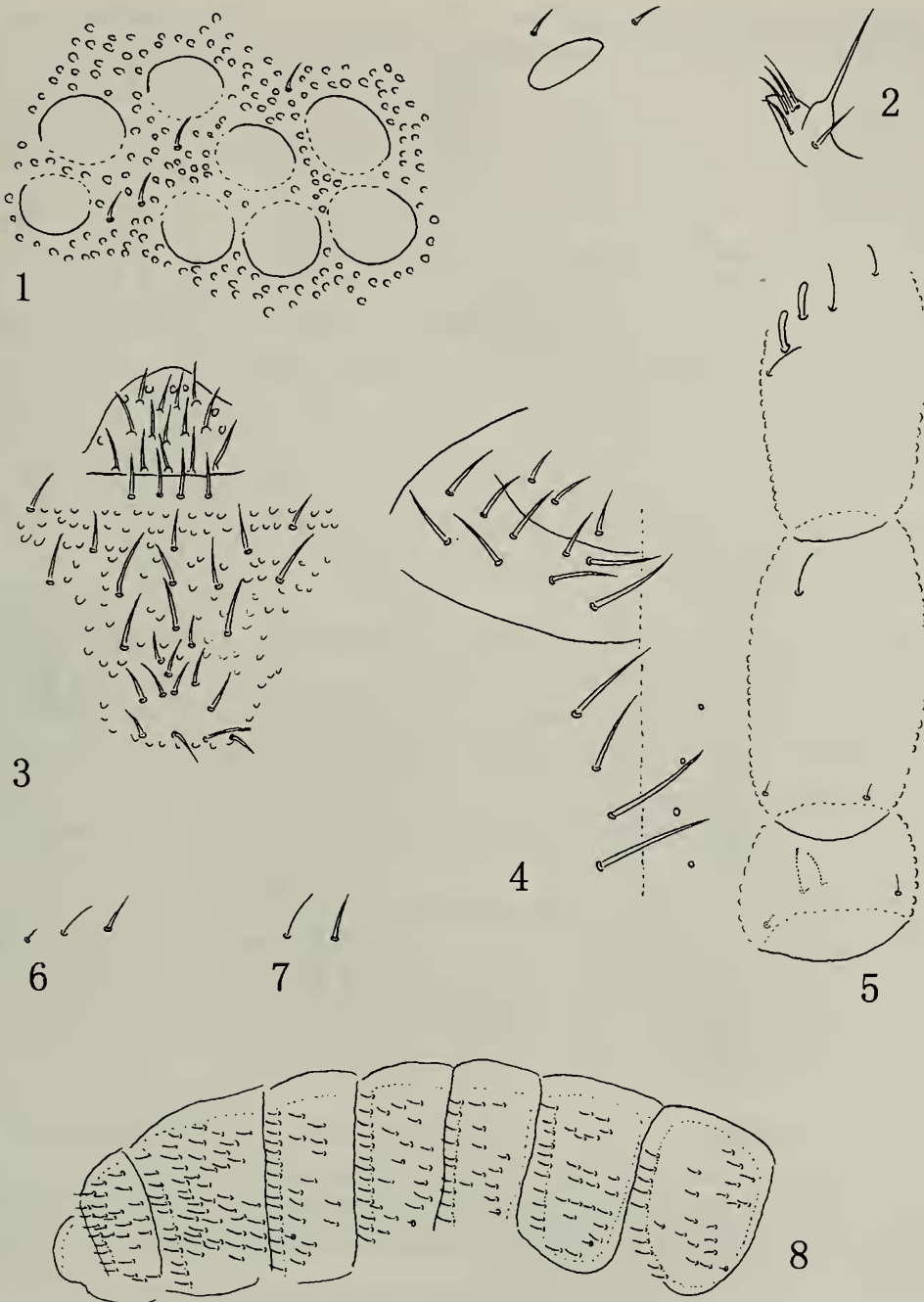
Pachyotoma emeiensis, Ding, sp. nov.

Figs. 1–14

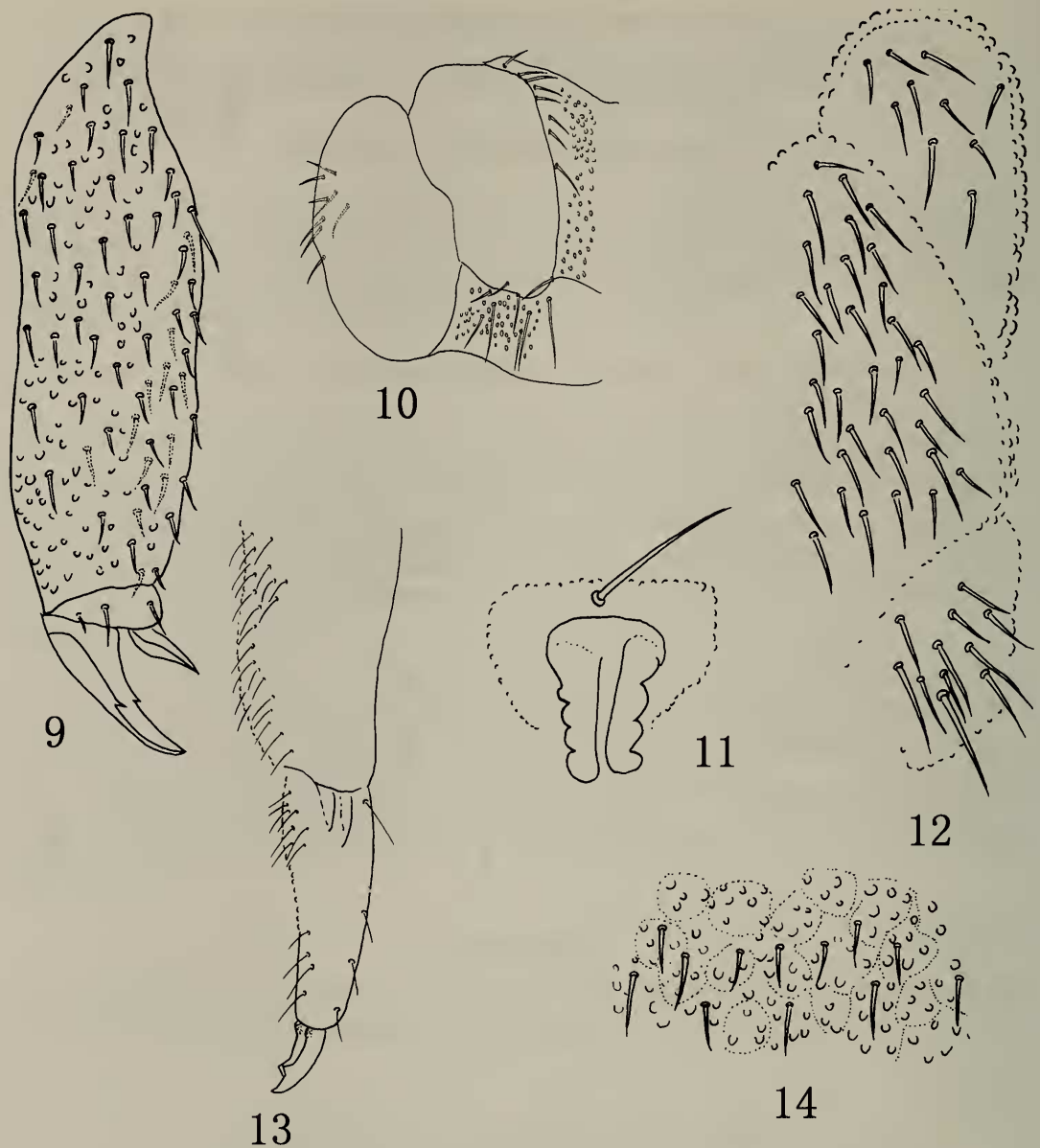
Type Data. Holotype: female, China: Sichuan Province: Emei City, 6-VIII-2006, collection number 1001. **Paratypes:** 7 females and 1 male, and about 100 specimens in alcohol, same data as holotype. All specimens were collected at the peak of Mount Emei. Type specimens are deposited in the School of Life Science, Nanjing Agricultural University.

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Figures 1-8. *Pachyotoma emeiensis*, sp. nov. 1. PAO and eyes; 2. maxillary outer lobe; 3. head (part), front view; 4. groups of proximal, basomedial and postlabial chaetae; 5. Ant. 1-3 (only sensillae and basal microsensillae shown); 6. sensillae, microsensillae and common chaetae on Th. II; 7. sensillae and common chaetae on Abd. IV; 8. general distribution of sensillar elements on body.



Figures 9-14. *Pachytoma emeiensis*, sp. nov. 9. tibiotarsus and claw of hind leg; 10. ventral tube; 11. retinaculum; 12. chaetotaxy of subcoxa furcalis, (right side); 13. furcula (lateral view); 14. cuticle of Th. II (part).

Abbreviations. AO, antennal organ of third antennal segment; PAO, postantennal organ; Abd. I-VI, abdominal segments I - VI; Ant. 1, 2, 3, 4 - antennal segments; 1, 2, 3, 4, VT, ventral tube; al, anteriolateral furcal subcoxa; am, anteriomedial furcal subcoxa; p, posterior furcal subcoxa; bms, basal microsensillum on antennal segments; ms - microsensillum; p-row, posterior row of tergal chaetae; s, sensillum.

Description. Maximum body length 1.3 mm.

Color. Heavily darkish black including appendages.

Integument. With inner reticulation and large secondary granulation all over the tergites; secondary granulation also present on appendages but inner reticulation absent there.

Head. Ommatidia 8+8, G and H slightly smaller or subequal to the other six. PAO oval, without distinct constriction nor inner denticles, almost as long as nearest ommatidia and basal width of Ant. 1, and with 2 guard chaetae along its outer margin (Fig. 1). Maxillary palp simple, maxillary outer lobe with 4 sublabial hairs (Fig. 2). Labral formula 4/5, 5, 4. Clypeus with about 25 chaetae, those in the 3 transversal rows closer to labrum stronger than the rest (Fig. 3). Labium with 3+3 proximal chaetae and 4+4 basomedian chaetae. Ventral side of head with 4+4 chaetae along linea ventralis (Fig. 4). Ant. 1 with 2 bms, dorsal and ventral, and 2 ventral s; Ant. 2 with 2 bms and 1 latero-distal s; Ant. 3 with 5 distal s (2 inner, 2 outer and 1 lateral) and without bms; inner sensilla of AO are elongate, of almost the same size as outer sensilla, just slightly shorter than common chaetae on Ant. 3 (Fig. 5). Numerous sensilla present on Ant. 4, subapical organelle small.

Body Chaetotaxy. Macrochaetae (Mac) generally not differentiated, only distally on Abd. VI with 1+1 macrochaetae. Length of the two macrochaetae twice that of longer common chaetae and almost equal to that of mucro. Most of body sensilla slightly shorter than common chaetae except those on Abd. IV. Sensilla on Abd. IV curved more than those on other body segments and relatively longer than common chaetae on the same segment (Figs. 6 and 7). Tergites of Th. II – Abd. V covered with numerous sensilla along p-row and on medial and lateral parts. Sensilla and common chaetae along p-rows of the segments mostly alternately arranged. Sensillar and microsensillar formulae respectively as 25–28, 29–33/ 17–20, 28–31, 24–29, 51–57, 26–29(s) and 1, 1/1, 1, 1, 1 (ms). Axial setae (common setae along median line on each side) of Th. II–Abd. III: 10–11, 8–10/6–7, 6–7, 6–7 (Fig. 8). Th. III with 45–48 chaetae in p-row. Thorax without ventral chaetae.

Appendages. Upper and lower subcoxa of leg 1, 2, 3 with 0, 2, 2 and 1, 5, 6 chaetae respectively. Unguis of normal size and shape, with inner tooth. Tibiotarsi of all legs with numerous additional chaetae (Fig. 9). Tenent hairs thin and pointed. Ventral tube with 8+8 latero-distal and 8–10 posterior chaetae (Fig. 10). Retinaculum with 4+4 teeth on rami and 1 chaetae on ventral side of corpus (Fig. 11). Anterior part of furcal subcoxa divided into two groups, anteriolateral with 10–11 chaetae and anteriomedial with 30–34 chaetae, posterior furcal subcoxa with 11–15 chaetae (Fig. 12). Anterior side of manubrium smooth and with no chaetae present, posterior side granulated and with 30–40 chaetae. Medial part of manubrium thickening bispinose. Dens with 4 anterior chaetae, 1 distal and 3 basomedial. Posterior side of dens with clear secondary granulation and 12–13 chaetae, with 8–9 chaetae in basal part and 4 in distal part. Mucro strong, with 1 apical tooth, 2 symmetrical subapical teeth and 2 lamella. Each subapical tooth connected with base of mucro by one lamella. Mucro with a hook-shaped apex (Fig. 13). Ratio of manubrium: dens: mucro as 3.3–3.5: 2.7–3.0: 1.

Ecological Remarks. Found under rocks in a mixed forest comprising of Musa, bamboo and broad-leaf trees.

Etymology. The new species is named after the type locality.

DISCUSSION

There were no reports of the genus *Pachyotoma* in China before Potapov et al. (2005) moved *P. dabeiensis*, which was described from southwest China, from *Bonetrura* into *Pachyotoma*. Potapov made the change because *Bonetrura* Christiansen and Bellinger, 1980 was established mostly on missing chaetae located on the anterior side of dens (*P. dabeiensis* does have these chaetae). We agree with this placement and wish to supplement it.

According to the original description of *Bonetrura boneti* its pronotum is well-developed. This remarkable character is found that the same occurs in our specimens collected from Yellow Mountain, Anhui Province, China. Also, all these specimens should be placed in the genus *Bonetrura* for possessing secondary granulation and a well-developed dens lacking chaetae on its anterior side. Likewise, they also possess a well-developed and elongate pronotum, which is equal to or longer than the mesonotum. However, Tamura and Zhao did not mention this in their description of *P. dabeiensis* and according to the original figure, the pronotum of the species is reduced.

The presence of both endoskeletal reticulation and secondary granulation is shown in the descriptions for *Jestella siva* and *J. armata*, but not found in the described species of *Pachyotoma*. Mucro shape of the new species is distinct from all other species of *Pachyotoma*. These two characters clearly define *P. emeiensis* sp. nov.

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